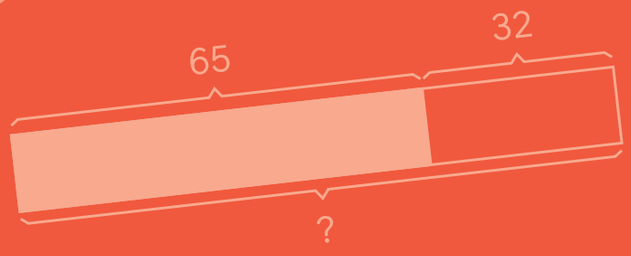
Marshall Cavendish Education



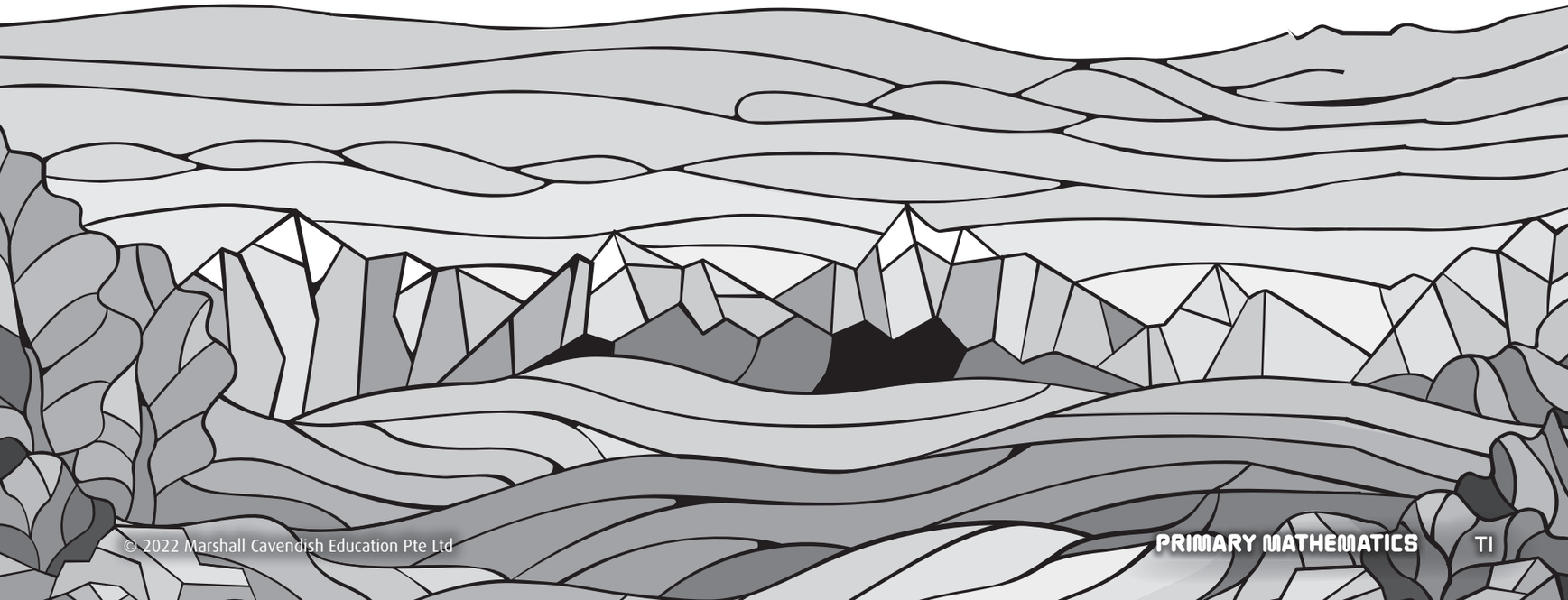
PRIMARY MATHEMATICS

Home Instructor's Guide

Grade 2A

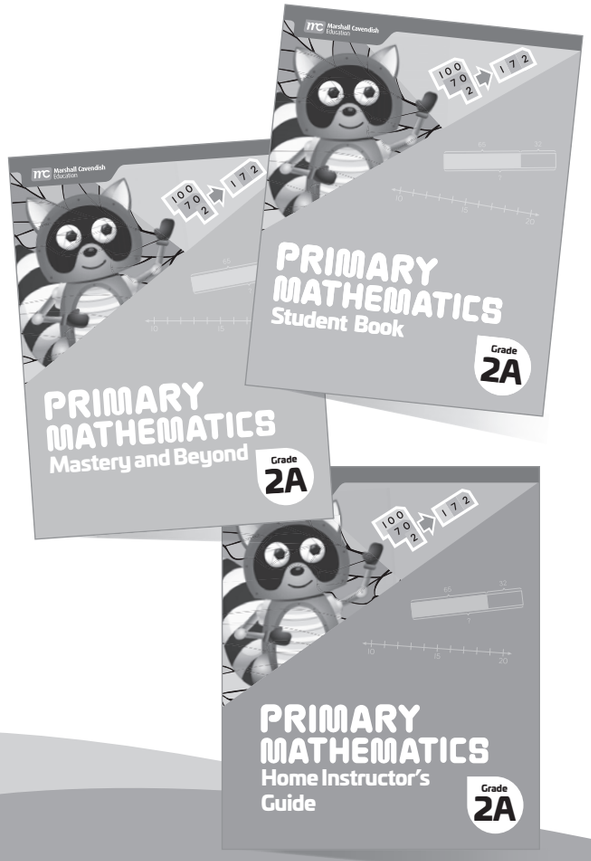
PRIMARY MATHEMATICS

From the original creators of the
Math program that propelled a nation
to world-class ranking



Components

Core Components



As a core component of **PRIMARY MATHEMATICS**, the **Student Book** aims to equip students with strong conceptual understanding, critical thinking, and problem-solving skills. Mathematical concepts are developed in a clear and sequential way to facilitate understanding.

Student Books are also available as **eBooks** for students to access during home-based learning.

The **Home Instructor's Guide** is designed to accompany the **Student Book**. The guide provides home instructors with teaching ideas and arms them with a repertoire of strategies to facilitate exploration, discussions, and student-centric learning. Provided in the **Home Instructor's Guide** are ideas for differentiation at appropriate junctures in a lesson, including concept development.

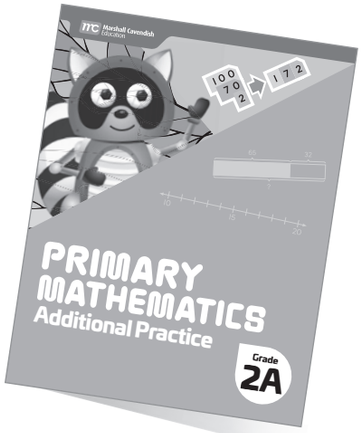
Practices in **Mastery and Beyond** guide students to apply essential mathematical concepts in unfamiliar contexts. Together, the **Student Book**, **Additional Practice**, and **Mastery and Beyond** are designed to develop fluency and flexibility in math.

Resources For Differentiated Instruction

Reteach exercises are written to help students who need additional support gain required conceptual understanding and skills. Each exercise directly correlates to a lesson in each section of a chapter.

Additional Practice supplements the **Student Book** and is targeted at providing students with on-level practice of concepts and skills learned in each chapter.

Extension exercises are written to develop creative problem-solving skills in students. Each exercise directly correlates to a lesson in each section of a chapter. The problems in each practice provide additional challenges and hone critical and creative thinking.

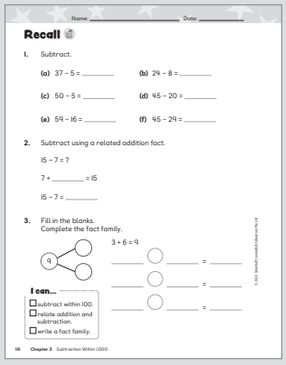


Assessment Opportunities

Assessment is an integral part of the teaching and learning process. The assessment opportunities in **PRIMARY MATHEMATICS** offer a complete picture of students' progress.

In the **Student Book**:

Recall at the start of each chapter assesses students' **readiness** for the chapter. It serves as a diagnostic assessment to measure students' prerequisite knowledge. Students will also self assess their readiness using the "I can" statements.


Name: _____ Date: _____

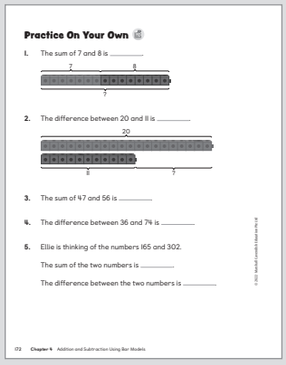
Recall

1. Subtract.
   (a) 37 − 5 = _____ (b) 24 − 8 = _____
   (c) 50 − 5 = _____ (d) 45 − 20 = _____
   (e) 54 − 16 = _____ (f) 45 − 29 = _____
2. Subtract using a related addition fact.
   15 − 7 = ?
   7 + _____ = 15
   15 − 7 = _____
3. Fill in the blanks.
   Complete the fact family.
   3 + 6 = 9
   6 + 3 = 9
   9 − 6 = _____
   9 − 3 = _____

I can...
- subtract within 100.
- relate addition and subtraction.
- write a fact family.

16 Chapter 3 Subtraction Within 1,000

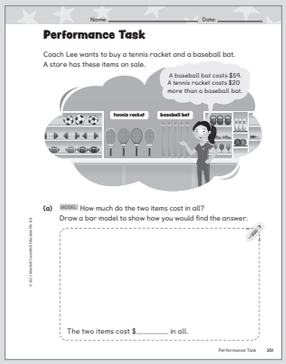
Practice On Your Own at the end of each lesson is a **formative assessment** to inform teachers about the next steps for mastery.


Practice On Your Own

1. The sum of 7 and 8 is _____
   7, 8, ?
2. The difference between 20 and 11 is _____
   20, 11, ?
3. The sum of 47 and 56 is _____
4. The difference between 36 and 74 is _____
5. Ellie is thinking of the numbers 165 and 302.
   The sum of the two numbers is _____
   The difference between the two numbers is _____

172 Chapter 4 Addition and Subtraction Using Bar Models

Performance Task is a **formative assessment** at the end of each chapter. It is set in a real-world context that provides opportunities for students to demonstrate their understanding and proficiency.


Name: _____ Date: _____

Performance Task

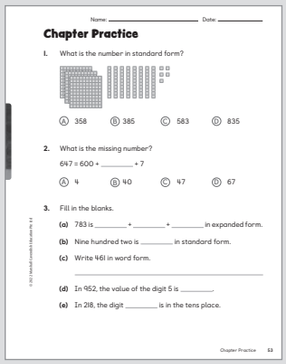
Coach Lee wants to buy a tennis racket and a baseball bat. A store has these items on sale.

(a) MODEL How much do the two items cost in all?
Draw a bar model to show how you would find the answer.

The two items cost $_____ in all.

Performance Task 209

Chapter Practice at the end of each chapter is used to consolidate students' learning. Students apply the concepts and skills learned in the chapter. The questions are leveled using *Depth of Knowledge* to prepare students for summative assessments.


Name: _____ Date: _____

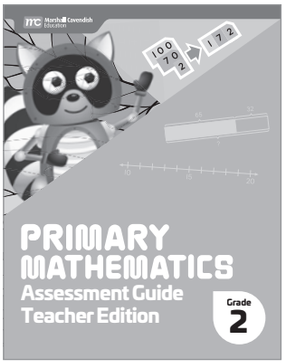
Chapter Practice

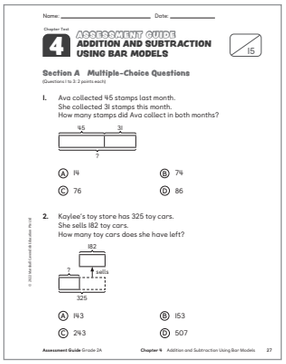
1. What is the number in standard form?
   Ⓐ 358 Ⓑ 385 Ⓒ 583 Ⓓ 835
2. What is the missing number?
   647 = 600 + _____ + 7
   Ⓐ 4 Ⓑ 40 Ⓒ 47 Ⓓ 67
3. Fill in the blanks.
   (a) 783 is _____ + _____ + _____ in expanded form.
   (b) Nine hundred two is _____ in standard form.
   (c) Write 461 in word form.
   _____
   (d) In 952, the value of the digit 5 is _____.
   (e) In 218, the digit _____ is in the tens place.

Chapter Practice 53

While the assessments in the **Student Book** are formative in nature, assessments that are available in the corresponding **Assessment Guide Teacher Edition** are **summative**.

In the **Assessment Guide Teacher Edition**, Chapter Tests and Cumulative Assessments are provided to assess students' mastery of concepts and skills.




Name: _____ Date: _____

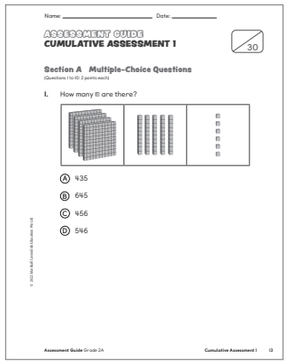
Chapter Test

4 ASSESSMENT GUIDE ADDITION AND SUBTRACTION USING BAR MODELS /15

Section A Multiple-Choice Questions
(Questions 1 to 2: 2 points each)

1. Ava collected 45 stamps last month.
   She collected 31 stamps this month.
   How many stamps did Ava collect in both months?
   45, 31, ?
   Ⓐ 14 Ⓑ 74
   Ⓒ 76 Ⓓ 86
2. Kaylee's toy store has 325 toy cars.
   She sells 182 toy cars.
   How many toy cars does she have left?
   182, ?, sells, 325
   Ⓐ 143 Ⓑ 153
   Ⓒ 243 Ⓓ 507

Assessment Guide Grade 2A Chapter 4 Addition and Subtraction Using Bar Models 27


Name: _____ Date: _____

ASSESSMENT GUIDE CUMULATIVE ASSESSMENT 1 /30

Section A Multiple-Choice Questions
(Questions 1 to 15: 2 points each)

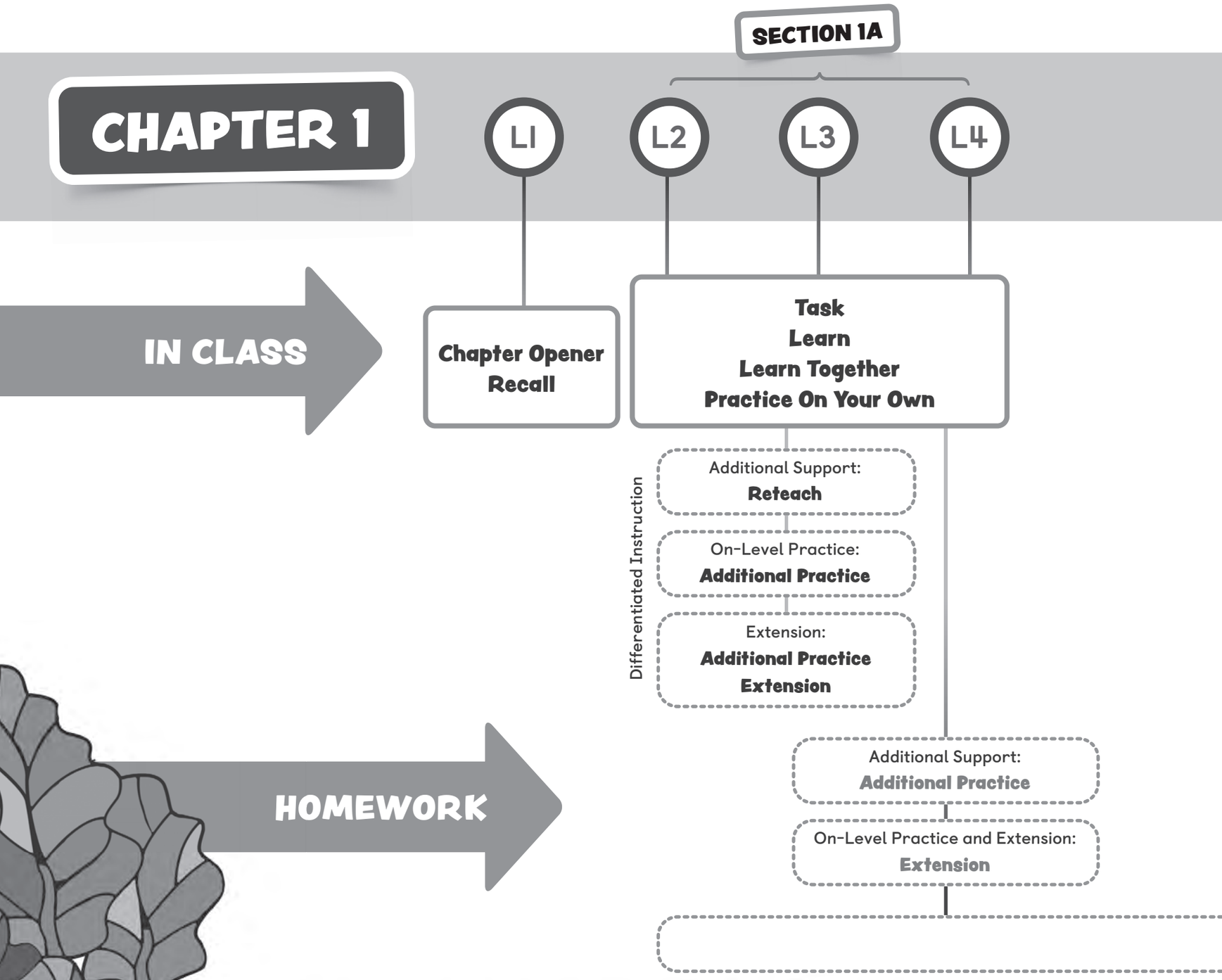
1. How many ▯ are there?
   Ⓐ 435
   Ⓑ 645
   Ⓒ 456
   Ⓓ 546

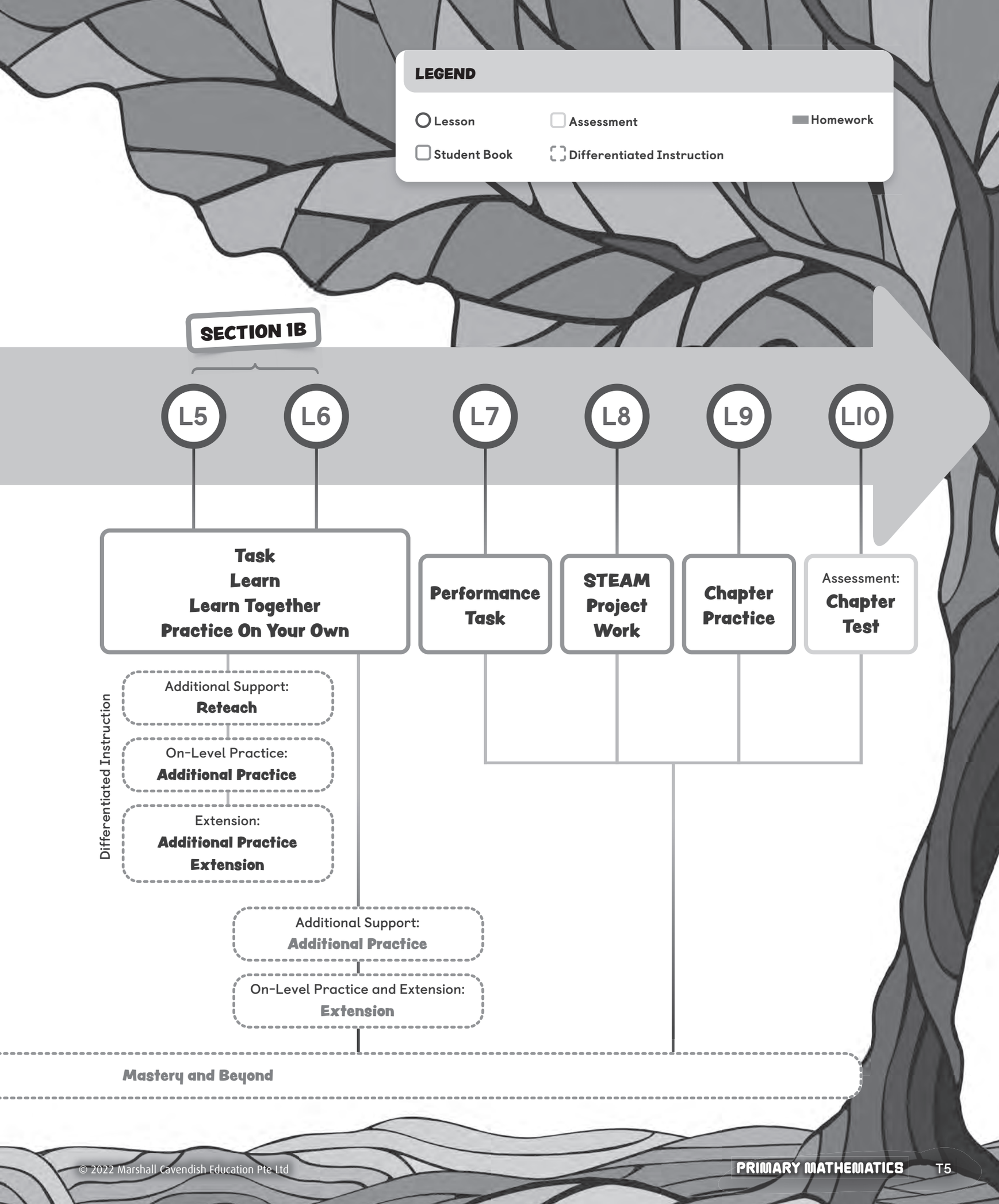
Assessment Guide Grade 2A Cumulative Assessment 1 13

- **Chapter Test** is administered at the end of each chapter to assess students' mastery of the concepts and skills in the chapter.
- **Cumulative Assessment** occurs at the end of a few chapters to assess students' mastery of the concepts and skills across the chapters.

Chapter Pathway

The instructional pathway across a chapter provides an effective learning experience for all students. The different sections and features in each chapter help students to build conceptual understanding through a range of practice and fluency-building activities as well as frequent opportunities for discussions, timely differentiated instruction, and problem-solving opportunities.



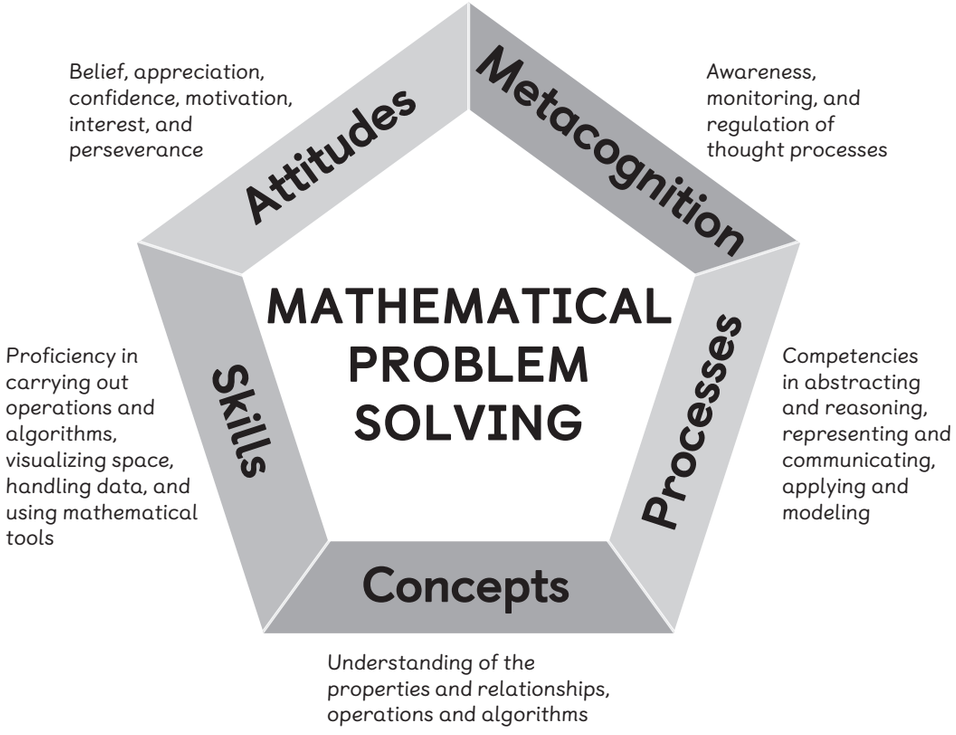


Strong fundamentals based on proven Singapore Math® approach

PRIMARY MATHEMATICS is centered on the approach developed and used in Singapore since the early 1980s. An approach that is used in Singapore schools today.

What is the SINGAPORE MATH® APPROACH?

The **Singapore Math®** approach emphasizes developing conceptual understanding, mathematical skills and processes, metacognition, and right attitudes. At the heart of this approach is mathematical problem solving.

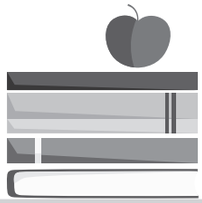


Referred from Singapore Ministry of Education Math Curriculum

Enabling Problem Solving

This is done with a consistent problem-solving process and the use of heuristics. Students are encouraged to persevere to discover mathematical results for varied situations and contexts.

Key characteristics of the SINGAPORE MATH® APPROACH



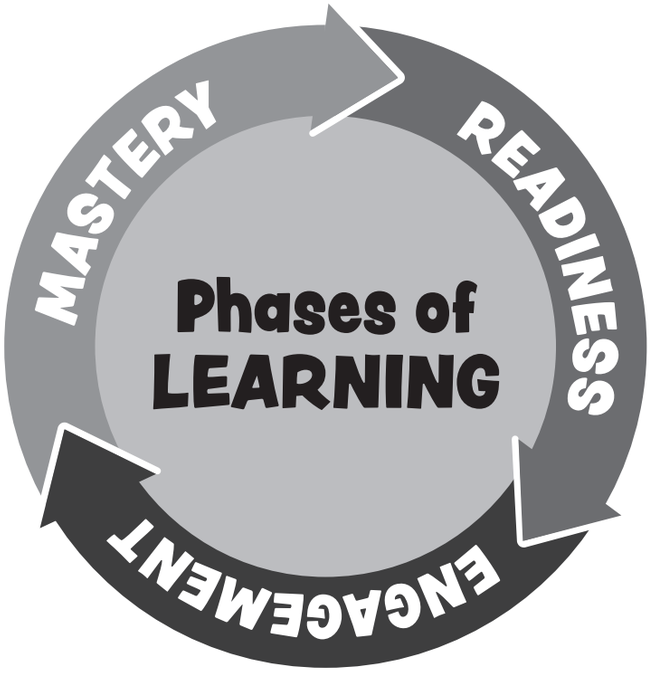
CONCRETE-PICTORIAL-ABSTRACT	Students engage with mathematical concepts by first handling **physical objects**, then representing mathematical ideas using **diagrams**, and finally using **abstract representations**. Through the use of concrete materials and visual representations, students are able to "see" and make sense of the math and the abstract representations.
VISUAL MODELS	Visual models such as number bonds, bar models, and fraction models are hallmarks of the **Singapore Math®** approach. These models help students visualize and understand abstract mathematical concepts.
PROBLEM SOLVING	**Heuristics** are introduced at each grade level to equip students with strategies to solve increasingly complex problems. Students apply these heuristics to solve real-world problems through a **consistent problem-solving process**.
MATHEMATICAL & PERCEPTUAL VARIATIONS	**Mathematical variation** presents opportunities for students to experience the same mathematical concept through various applications. **Perceptual variation** showcases a mathematical concept using different representations. Variation deepens understanding as students apply mathematical concepts in different ways.
LEARNING PROGRESSION	Math is learned **incrementally**, with one concept building on the next. More depth is added, linking new concepts to the learning that has already taken place. Learning math this way leads to **deeper conceptual understanding**.
DIFFERENTIATION & ASSESSMENT	Students' learning is supported through **differentiated activities** and **practices**. Students receive timely feedback on their learning through **formative** and **summative assessments**.

Structured for effective instruction

PRIMARY MATHEMATICS is based on the Readiness-Engagement-Mastery instructional design.

Phases of LEARNING

Readiness–Engagement–Mastery is the instructional model advocated for in the Singapore mathematics curriculum.



READINESS

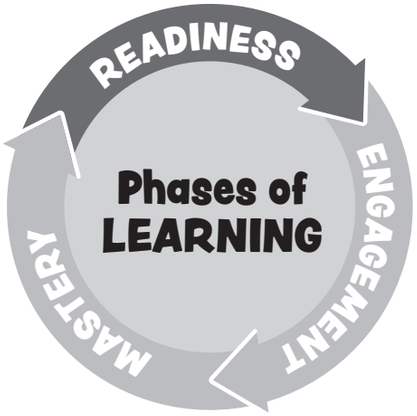
In this phase, home instructors engage students, capturing their attention through interesting and relatable scenarios. Home instructors ascertain readiness to learn by helping students make connections to previously-learned concepts and skills.

ENGAGEMENT

Students learn by doing, and are challenged to construct new knowledge through engaging activities and guided inquiry.

MASTERY

Students gain fluency and confidence through leveled practice. They gain mastery through review and reflection in oral and written forms. They also tackle problems in unique and effective ways.

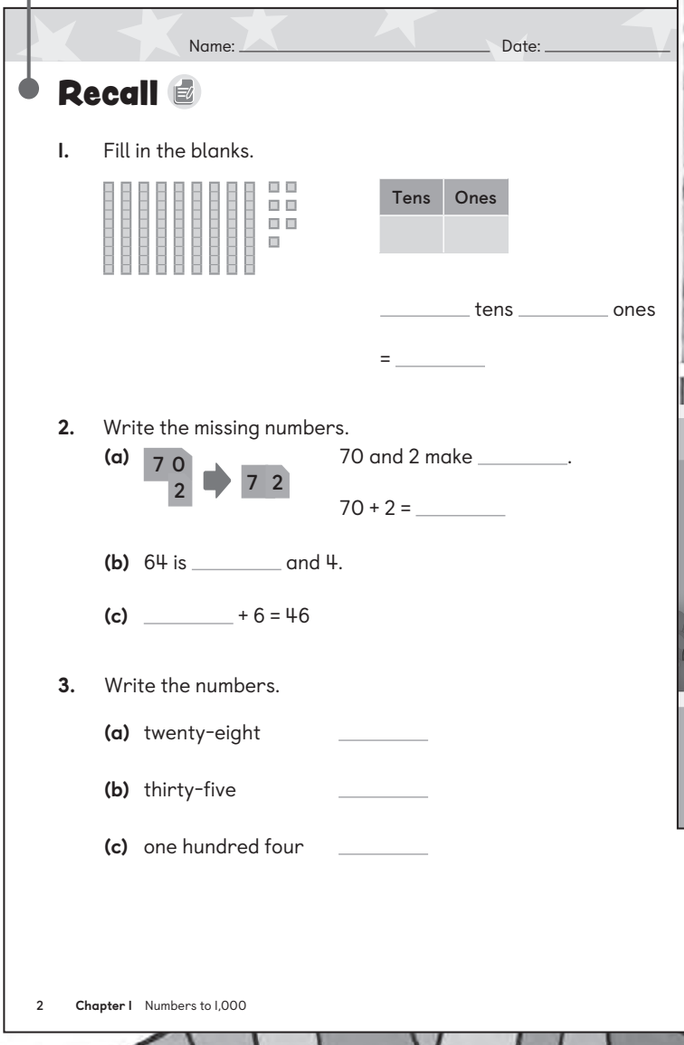


For the "**Readiness**" phase of learning, students engage in learning through:

- **Student Book**
  - **Chapter Opener**
  - **Recall**

CHAPTER OPENER stimulates curiosity and interest through a context that connects Math to real life, taps into prior knowledge, and encourages discussion.

RECALL assesses students' readiness for the chapter so that home instructors can allocate appropriate resources during lessons.



Name: _____ Date: _____

Recall

1. Fill in the blanks.

Tens	Ones

_____ tens _____ ones

= _____

2. Write the missing numbers.

(a) 70 and 2 make _____.

70 + 2 = _____

(b) 64 is _____ and 4.

(c) _____ + 6 = 46

3. Write the numbers.

(a) twenty-eight _____

(b) thirty-five _____

(c) one hundred four _____

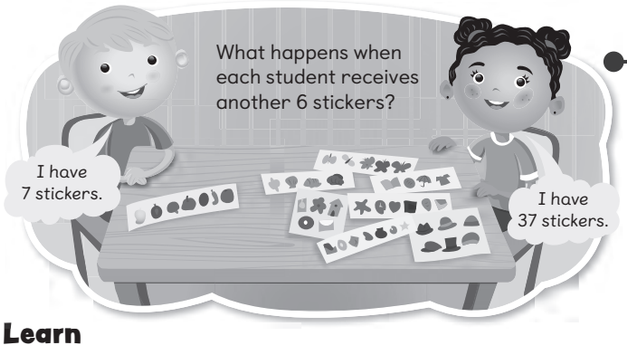
2 **Chapter 1** Numbers to 1,000

For the "**Engagement**" phase of learning, students engage in learning through:

- **Student Book**
  - **Task**
  - **Learn**
  - **Learn Together**
  - **Activity!**

Name: _____ Date: _____

2D Add With Renaming



Learn

7 + 6 = ?

7 + 6 = _____

Make 10.

7 + 6

3 3

7 + 3 = 10

10 + 3 = _____

37 + 6 = ?

37 + 6 = _____

Make 40.

37 + 6

3 3

37 + 3 = 40

40 + 3 = _____

Talk about other ways to add two numbers. Which way do you prefer?

TASKS are relatable questions just beyond students' current level of formal learning. They provide opportunities for productive struggle.

LEARN is a teacher-guided inquiry related to the Task. It introduces the most fundamental aspect of a concept for that learning objective. Students learn through concrete experiences and visual models.

DIGITAL MANIPULATIVES are interactive tools that support teaching and learning.

LEARN TOGETHER consists of a series of problems that are carefully varied and progress from the simplest concept in **LEARN** to more complex ones, developing and deepening students' understanding. **LEARN TOGETHER** is student-centric. The variation exposes students to the different ways a concept can be tested. This helps them to develop application of concepts in different perspectives.

ACTIVITY! requires students to solve problems collaboratively and to demonstrate understanding by articulating their thinking.

Learn Together

1.

Hundreds	Tens	Ones
2	9	7

200
90
7

(a) In 297, the digit 2 is in the hundreds **place**.

Its **value** is _____.

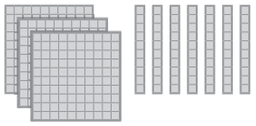
(b) In 297, the digit 9 is in the tens place.

Its value is _____.

(c) In 297, the digit 7 is in the ones place.

Its value is _____.

2.



Hundreds	Tens	Ones
3	7	0

300
70

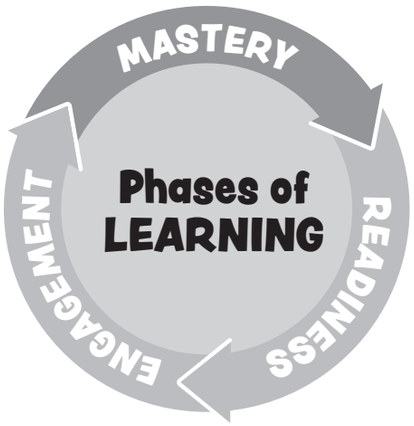
3 hundreds 7 tens = _____

300 + 70 = _____

Activity!

Pick an addition card.
Find the answer.
Place on the correct answer on the board.

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20



For the "**Mastery**" phase of learning, students gain mastery through these resources:

- **Student Book**
  - **Practice On Your Own**
  - **Think!**
  - **Chapter Practice**
  - **Performance Task**
  - **STEAM Project Work**
  - **Heuristics**
- **Reteach**
- **Additional Practice**
- **Extension**
- **Mastery and Beyond**

PRACTICE ON YOUR OWN is an independent practice at the end of a lesson. It serves as a formative assessment, informing home instructors which differentiated resources they should use with their students..

THINK! challenges students to use different strategies to solve a novel problem.

Name: _____ Date: _____

Practice On Your Own

1. Match.

- ten-dollar bill
- five-dollar bill
- twenty-dollar bill
- hundred-dollar bill
- one-dollar bill

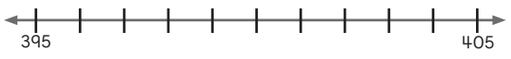
2. How much money is there?

(a)

$_____

Think!

3. MODEL AND REASON Show the numbers 402, 396, and 398 on the number line.
How would you use the number line to order the numbers?
Explain your answer.



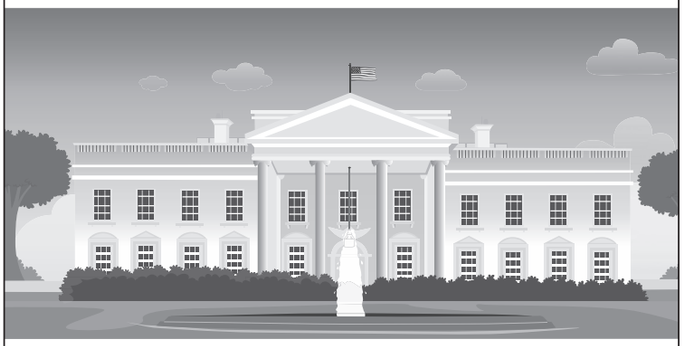
PERFORMANCE TASKS are formative assessment tasks, set in real-world contexts, with accompanying rubrics. The questions require application of concepts and skills learned or they may be open-ended but with limited possible answers.

STEAM PROJECT WORK is an interdisciplinary task that spans multiple chapters and shows the relevance and importance of mathematics. It promotes critical and creative thinking.

Name: _____ Date: _____

Performance Task

The White House is the home and office of the President of the United States.



1. The White House has 412 doors and 147 windows.
How many more doors than windows are there?

There are _____ more doors than windo

Project Work

STEAM

Pixel Art

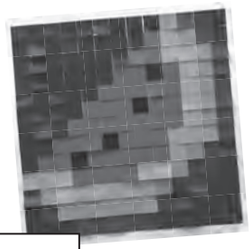
A digital image is made of tiny colored squares called "pixels."
A digital image can be formed without a computer.
You can put together square pieces of paper or sticky notes.

Task

1. Choose a pixel art to make.
Name the pixel art.

2. Plan the number of different colored pieces of paper your pixel art will need.

3. Make your pixel art.
Ensure that you do not overlap the pieces of paper



d you use?
pieces of paper

CHAPTER PRACTICE consolidates concepts and skills across a chapter through leveled and independent practice.

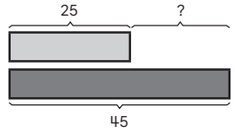
Name: _____ Date: _____

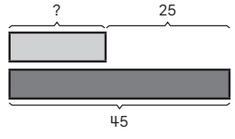
Chapter Practice

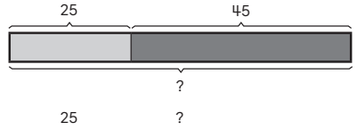
1. Carla is 7 years old.
Her brother is 15 years old.
Find the difference between their ages.

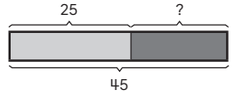
(A) 7 (B) 8
(C) 20 (D) 22

2. Justin has 25 crayons.
He buys another 45 crayons.
Which bar model shows the number of crayons he has now?

(A)


(B)


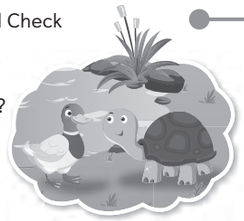
(C)


(D)


Name: _____ Date: _____

Solve! Heuristics: Guess and Check

There are 8 ducks and tortoises in a pond.
They have 26 legs in all.
How many tortoises are there in the pond?



Step 1 **Understand**

How many ducks and tortoises are there in the pond?
How many legs does each duck or tortoise have?
How many legs are there in all?

Step 2 **Plan**

I make a **guess** of the answer.
Then I **check** if it is correct.

Step 3 **Do**

Number of ducks	Number of tortoises	Number of duck legs	Number of tortoise legs	Number of legs in all	Check (✔/✘)
4	4	2 + 2 + 2 + 2 = 8	4 + 4 + 4 + 4 = 16	8 + 16 = 24	✘
5	3	2 + 2 + 2 + 2 + 2 = 10	4 + 4 + 4 = 12	10 + 12 = 22	✘
3	5	2 + 2 + 2 = 6	4 + 4 + 4 + 4 + 4 = 20	6 + 20 = 26	✓

There are 5 tortoises in the pond.

Step 4 **Look Back**
Check that the answer makes sense.

Is there another way to solve the problem?

SOLVE! HEURISTICS is a dedicated section to teach problem-solving strategies that can be applied to different types of problems. Across the grades, students will be introduced to new strategies that will help them tackle complex problems.

Name: _____ Date: _____

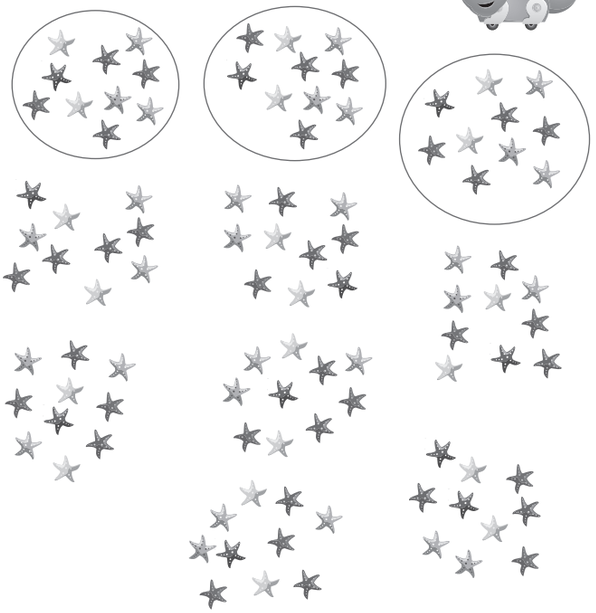
Chapter 1

MASTERY AND BEYOND
NUMBERS TO 1,000

Practice 1

1. How large is 100?

Make tens and count.
10, 20, 30, ...



_____ tens make 100.

MASTERY AND BEYOND consolidates concepts and skills at a section level of a chapter to deepen and strengthen students' understanding.

Name: _____ Date: _____

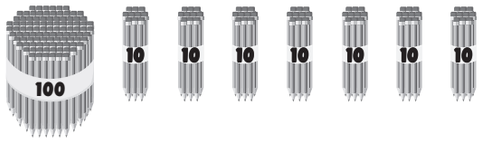
Chapter 1

RETEACH
NUMBERS TO 1,000

Exercise 1A Count to 1,000 (1)

Example 1

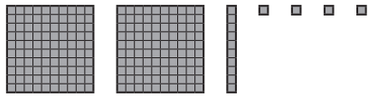
(a) How many pencils are there?



100, 110, 120, 130, 140, 150, 160, 170

There are 170 pencils.

(b) Count.



214

100, 200, 210, 211, 212, 213, 214

RETEACH consists of worked examples and scaffolded, leveled questions for students who need more support in reaching mastery.

ADDITIONAL PRACTICE provides on-level practice at the end of each lesson. This component enables students to hone their skills and sharpen their grasp of concepts.

Name: _____ Date: _____

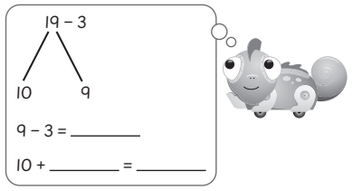
Chapter 3

ADDITIONAL PRACTICE
SUBTRACTION WITHIN 1,000

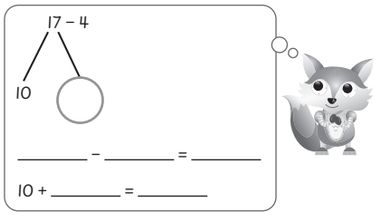
Exercise 3A Subtract Fluently Within 20 (1)

1. Take away to subtract.

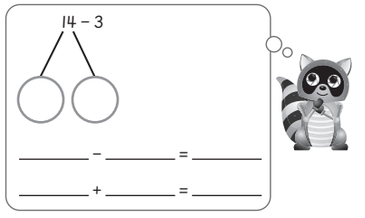
(a) 19 − 3 = _____



(b) 17 − 4 = _____



(c) 14 − 3 = _____



EXTENSION consists of novel and higher-order thinking problems to motivate students with challenging practice.

Name: _____ Date: _____

Chapter 1

EXTENSION
NUMBERS TO 1,000

Exercise 1A Count to 1,000 (1)

1. REASON Kate counts by ones.
Sam counts by tens.
Lisa counts by hundreds.
When Kate counts to 5, Sam starts to count by tens.
When Sam counts to 20, Lisa starts to count by hundreds.
When Kate has counted to 10, what numbers have Sam and Lisa counted to?

About this Home Instructor's Guide

Quality resources, ideas, and strategies make your planning seamless and your lessons coherent.

CHAPTER OVERVIEW provides embedded Professional Development by providing insights into the Key Ideas of the chapter. Materials needed for the whole chapter are listed to provide home instructors with an overview of things they need to prepare for the chapter.

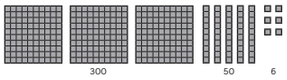
Chapter 1

NUMBERS TO 1,000

Chapter Overview

In this chapter, your student will build upon the understanding of numbers to 120 from first grade to deepen place-value concepts of numbers to 1,000. Your student will:

- use **base-ten sets** to count to 1,000.

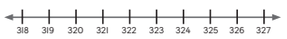


- use **place value** to determine the value of each digit in a number before finding 1 more, 1 less, 10 more, 10 less, 100 more, or 100 less than a number. He/she moves on to **compare and order numbers** using place value.

Hundreds	Tens	Ones
4	9	1
4	8	9

489 < 491

- use **number lines** to identify patterns and find missing numbers.



- learn to **identify bills and count** to find the value of a set of bills before **comparing and ordering** the amounts.

Set A	Set B
	

$106 = $106

Key Ideas

- We can represent numbers in various ways.
  The number in standard form is 356.
  The number in expanded form is 300 + 50 + 6.
  The number in word form is three hundred fifty-six.
- We can compare and order numbers based on their values.

Hundreds	Tens	Ones
7	0	1
4	8	7
4	9	2

701 is the greatest.
487 is the least.
487 < 492 < 701
least greatest

- We can identify the rule for a number pattern to find the missing numbers on a number line.

- We can count to find the total amount of money and exchange bills to make the same amount.
  10 ten-dollar bills can be exchanged for a $100 bill.
  10 one-dollar bills can be exchanged for a $10 bill.

Materials You Will Need

- 1 base-ten set
- 1 set of connecting cubes
- 1 number cube
- 1 set of paper money
- 1 set of place-value strips
- Place-Value Chart 1 (TR01)
- Hundred Chart (TR02)
- Place-Value Chart 2 (TR03)
- Number Cards (TR04)
- Number Tape Template (TR05)
- More/Less Cards (TR06)
- Number Line Template (TR07)

CHAPTER AT A GLANCE shows the learning outcomes, new vocabulary, materials, and instructional resources necessary to prepare for teaching.

Chapter at a Glance

	Day	Learning Outcome(s)	Vocabulary	Resource(s)	Material(s)
Chapter Opener / Recall Student Book, pp. 1–4	1 of 17				• 1 base-ten set • 1 number cube • 1 set of place-value strips • 1 copy of Place-Value Chart 1 (TR01) • 1 copy of Hundred Chart (TR02)
Section 1A **Count to 1,000 (1): Count to 1,000** Student Book, pp. 5–10	2 of 17	• Read and write numbers up to 1,000.	• thousand • standard form • expanded form • word form	• **Additional Practice 2A**, Exercise 1A (1) • **Reteach 2**, Exercise 1A (1) • **Extension 2**, Exercise 1A (1)	• 1 base-ten set • 1 number cube
Section 1A **Count to 1,000 (2): Hundreds, Tens, and Ones** Student Book, pp. 11–16	3 of 17	• Relate the value of each digit in a 3-digit number to its place.	• place value	• **Additional Practice 2A**, Exercise 1A (2) • **Reteach 2**, Exercise 1A (2) • **Extension 2**, Exercise 1A (2) • **Mastery and Beyond 2A**, Chapter 1, Practices 1 and 2	• 1 base-ten set • 1 set of place-value strips • 1 copy of Place-Value Chart 2 (TR03) • 1 copy of Number Cards (TR04)
Section 1B **Number Patterns (1): 1 More, 1 Less, 10 More, 10 Less, 100 More, or 100 Less** Student Book, pp. 17–20	4 of 17	• Use base-ten set and a place-value chart to show 1 more, 1 less, 10 more, 10 less, 100 more, or 100 less than a number.		• **Additional Practice 2A**, Exercise 1B (1) • **Reteach 2**, Exercise 1B (1) • **Extension 2**, Exercise 1B (1)	• 1 base-ten set • 1 copy of Place-Value Chart 2 (TR03) • 1 copy of Number Tape Template (TR05) • 1 copy of More/Less Cards (TR06)

tcome(s)	Vocabulary	Resource(s)	Material(s)
ney in bills within money.		• **Additional Practice 2A**, Exercise 1E (3) • **Reteach 2**, Exercise 1E (3) • **Extension 2**, Exercise 1E (3)	• 1 set of paper money • 1 copy of Place-Value Chart 2 (TR03)
		• **Additional Practice 2A**, Chapter Practice	
		• **Assessment Guide Teacher Edition**, Chapter Test 1	

CHAPTER OPENER supports home instructors with suggestions to engage students in mathematical conversations.

TEACHING TIP highlights common learning difficulties that students may encounter in the chapter and provides suggestions for home instructors to address those difficulties.

RECALL highlights the learning objectives of each question and provides questioning prompts for discussions.

MAKE IT A GAME! provides instructions for a game for home instructors to carry out with students to help them review prior knowledge of the chapter.

Day 1 of 17

Chapter Opener (Student Book, page 1)

Consider the picture and the questions on the page. Discuss them with your student. Prompt him/her to consider the information given in the picture and what is being asked. You may wish to ask the following questions:

- **What do you notice about each phone?** *The phones have different prices. Some phones have prices that have hundreds. Others only have tens and ones.* **What do you notice about the prices of the phones? How would you determine the cheapest phone?** *Compare the prices of the phones using place value.* **What strategies would you use?** *I would use a base-ten set and a place-value chart to see which has more.* **Why do you compare prices?** *to find a better deal; to save money*

Teaching Tip

If your student is unsure about how to compare the prices of the phones, encourage him/her to build each price using place-value materials. Invite him/her to compare each place and notice the value of each digit.

Recall (Student Book, pages 2 to 4)

Material(s)

- 1 base-ten set
- 1 set of connecting cubes
- 1 number cube
- 1 set of place-value strips
- 1 copy of Place-Value Chart 1 (TR01)
- 1 copy of Hundred Chart (TR02)

Before moving on to the problems on page 2 of the Student Book, have your student model similar tasks using concrete materials, such as a base-ten set and connecting cubes. Once you are convinced of his/her proficiency, move on to asking your student to create similar numbers using place-value strips and Place-Value Chart 1 (TR01).

Make it a Game!

Encourage your student to roll a number cube twice to form a 2-digit number. Then have your student write the number in words. Next, encourage him/her to find 1 more, 1 less, 10 more, or 10 less than the number he/she has formed. Keep track of the numbers created and then have your student choose two numbers to compare.

- **How will you represent your number with a base-ten set?** *Make the number of tens and ones.* **How do you know how many ones to use?** *I can show the number in the ones place.* **How does this number change when you add 1 more?** *It increases by 1.* **How do you use place value to compare your numbers?** *Compare the place with the greatest value.*

FOR ADDITIONAL SUPPORT provides suggestions for students who might need extra help understanding concepts.

DIGGING DEEPER provides suggestions to challenge students and help them apply concepts in different situations.

Lesson Debrief

- Conclude the lesson and facilitate your student's reflection by asking him/her to answer the **Focus Question** and share his/her thinking.
- Extend the discussion by posing the following questions.
  - **How can you relate the subtraction of ones to the subtraction of tens?** *Both can be treated like digits being subtracted. The place value changes making the value of the digits change.* **How can you subtract tens from hundreds?** *I can write the hundreds as tens and then subtract.*

Reflect and Connect

- Allow time for your student to reflect on what he/she has learned and ask questions about what he/she may be unsure of.
- Encourage him/her to share anything that was confusing or difficult, and how thinking about it differently and perseverance helped the process of learning.
- Ask your student to answer a reflection question or draw a picture to show his/her reflection. You may offer these prompts:
  - **How did you subtract tens today? What two methods did you learn? How are they different? Which method works best for you?**

What to look for:

- an example of subtracting mentally using tens
- an explanation of subtracting tens by breaking apart tens and hundreds or renaming hundreds as tens
- a reflection of which strategy works best for your student

Practice On Your Own (Student Book, page 130)

- **QUESTION 1** assesses your student's ability to relate subtracting tens to subtracting ones.
- **QUESTION 2** assesses your student's ability to subtract tens mentally by choosing appropriate strategies.

For Additional Support

This sequence of practice questions requires your student to subtract mentally. If your student requires additional support, have him/her go back to using a base-ten set to subtract.

Digging Deeper

Encourage your student to consider which mental strategies from subtracting ones can help him/her to subtract the tens.

- **What strategies can help you subtract the tens?** *Counting on, counting back, or taking away.*

Practice On Your Own Answers

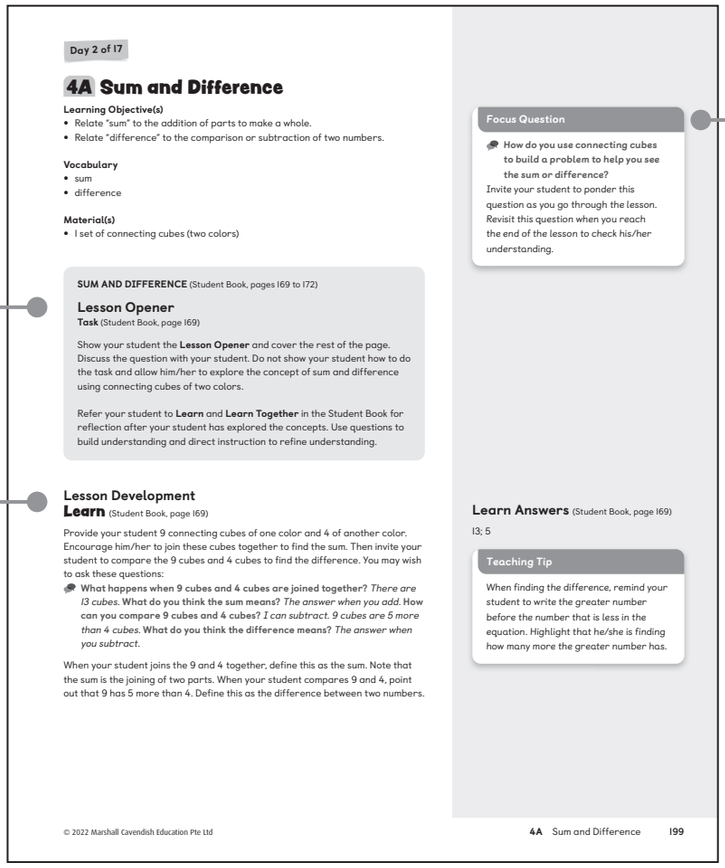
(Student Book, page 130)

1. **(a)** 2; 20 **(b)** 4; 40
   (c) 40 **(d)** 10
2. **(a)** 120 **(b)** 70
   (c) 280 **(d)** 340
   (e) 130 **(f)** 640

LESSON OPENER provides teaching ideas for home instructors to orchestrate concrete experiences in **TASK**.

LESSON DEVELOPMENT provides ideas for concrete experiences and support at different levels of mastery.

FOCUS QUESTION at the start of the lesson helps home instructors shape the learning objectives of the lesson and enable students to keep the focus of the lesson in mind.



Day 2 of 17

4A Sum and Difference

Learning Objective(s)
- Relate "sum" to the addition of parts to make a whole.
- Relate "difference" to the comparison or subtraction of two numbers.

Vocabulary
- sum
- difference

Material(s)
- 1 set of connecting cubes (two colors)

SUM AND DIFFERENCE (Student Book, pages 169 to 172)

Lesson Opener
Task (Student Book, page 169)

Show your student the **Lesson Opener** and cover the rest of the page. Discuss the question with your student. Do not show your student how to do the task and allow him/her to explore the concept of sum and difference using connecting cubes of two colors.

Refer your student to **Learn** and **Learn Together** in the Student Book for reflection after your student has explored the concepts. Use questions to build understanding and direct instruction to refine understanding.

Lesson Development
Learn (Student Book, page 169)

Provide your student 9 connecting cubes of one color and 4 of another color. Encourage him/her to join these cubes together to find the sum. Then invite your student to compare the 9 cubes and 4 cubes to find the difference. You may wish to ask these questions:
- **What happens when 9 cubes and 4 cubes are joined together?** *There are 13 cubes.* **What do you think the sum means?** *The answer when you add.* **How can you compare 9 cubes and 4 cubes?** *I can subtract. 9 cubes are 5 more than 4 cubes.* **What do you think the difference means?** *The answer when you subtract.*

When your student joins the 9 and 4 together, define this as the sum. Note that the sum is the joining of two parts. When your student compares 9 and 4, point out that 9 has 5 more than 4. Define this as the difference between two numbers.

Focus Question
- **How do you use connecting cubes to build a problem to help you see the sum or difference?**

Invite your student to ponder this question as you go through the lesson. Revisit this question when you reach the end of the lesson to check his/her understanding.

Learn Answers (Student Book, page 169)

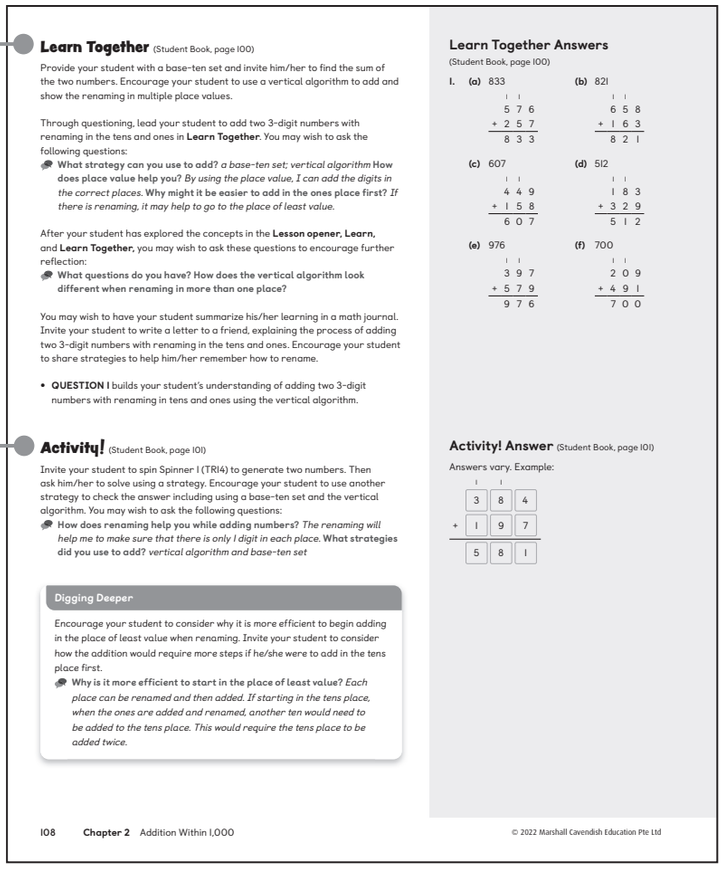
13; 5

Teaching Tip

When finding the difference, remind your student to write the greater number before the number that is less in the equation. Highlight that he/she is finding how many more the greater number has.

LEARN TOGETHER gives prompts and questions to lead students towards deeper understanding. Answers to problems in Learn Together are provided at point of use for easy reference.

ACTIVITY! provides the intent of the collaborative task, the steps to carry out the task, and suggested prompts to facilitate discussions.



Learn Together (Student Book, page 100)

Provide your student with a base-ten set and invite him/her to find the sum of the two numbers. Encourage your student to use a vertical algorithm to add and show the renaming in multiple place values.

Through questioning, lead your student to add two 3-digit numbers with renaming in the tens and ones in **Learn Together**. You may wish to ask the following questions:
- **What strategy can you use to add?** *a base-ten set; vertical algorithm* **How does place value help you?** *By using the place value, I can add the digits in the correct places.* **Why might it be easier to add in the ones place first?** *If there is renaming, it may help to go to the place of least value.*

After your student has explored the concepts in the **Lesson opener, Learn,** and **Learn Together,** you may wish to ask these questions to encourage further reflection:
- **What questions do you have? How does the vertical algorithm look different when renaming in more than one place?**

You may wish to have your student summarize his/her learning in a math journal. Invite your student to write a letter to a friend, explaining the process of adding two 3-digit numbers with renaming in the tens and ones. Encourage your student to share strategies to help him/her remember how to rename.

- **QUESTION 1** builds your student's understanding of adding two 3-digit numbers with renaming in tens and ones using the vertical algorithm.

Activity! (Student Book, page 101)

Invite your student to spin Spinner 1 (TR14) to generate two numbers. Then ask him/her to solve using a strategy. Encourage your student to use another strategy to check the answer including using a base-ten set and the vertical algorithm. You may wish to ask the following questions:
- **How does renaming help you while adding numbers?** *The renaming will help me to make sure that there is only 1 digit in each place.* **What strategies did you use to add?** *vertical algorithm and base-ten set*

Digging Deeper

Encourage your student to consider why it is more efficient to begin adding in the place of least value when renaming. Invite your student to consider how the addition would require more steps if he/she were to add in the tens place first.
- **Why is it more efficient to start in the place of least value?** *Each place can be renamed and then added. If starting in the tens place, when the ones are added and renamed, another ten would need to be added to the tens place. This would require the tens place to be added twice.*

Learn Together Answers
(Student Book, page 100)

1. (a) 833

$$\begin{array}{r} 576 \\ +\ 257 \\ \hline 833 \end{array}$$

(b) 821

$$\begin{array}{r} 658 \\ +\ 163 \\ \hline 821 \end{array}$$

(c) 607

$$\begin{array}{r} 449 \\ +\ 158 \\ \hline 607 \end{array}$$

(d) 512

$$\begin{array}{r} 183 \\ +\ 329 \\ \hline 512 \end{array}$$

(e) 976

$$\begin{array}{r} 397 \\ +\ 579 \\ \hline 976 \end{array}$$

(f) 700

$$\begin{array}{r} 209 \\ +\ 491 \\ \hline 700 \end{array}$$

Activity! Answer (Student Book, page 101)

Answers vary. Example:

$$\begin{array}{r} 384 \\ +\ 197 \\ \hline 581 \end{array}$$

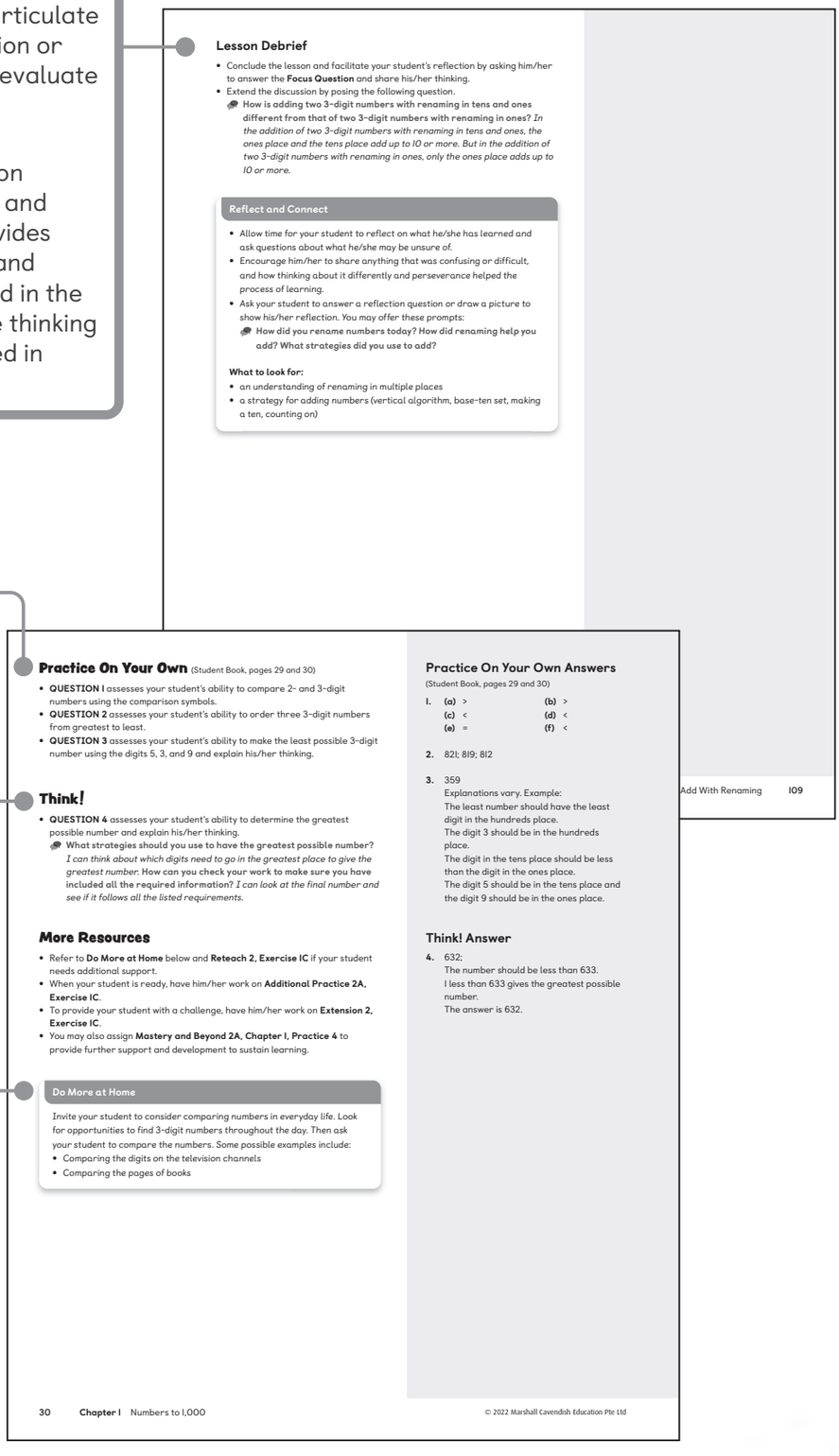
LESSON DEBRIEF wraps up the lesson by posing focus questions for students to articulate their understanding through conversation or journalling and for home instructors to evaluate students' level of understanding.

The focus question serves as a reflection question for home instructors to assess and evaluate students' learning. It also provides the opportunity for students to reflect and demonstrate how well they have learned in the lesson. Strategies to promote reflective thinking and a learning mindset are also provided in **Reflect and Connect**.

PRACTICE ON YOUR OWN provides the learning objective of each question as well as describes the variation between questions for mastery of the lesson.

THINK! provides higher-order thinking questions and prompts to facilitate discussions.

DO MORE AT HOME provides suggested activities that home instructors can carry out with students to help them reinforce the necessary concepts taught in the lesson.



Lesson Debrief

- Conclude the lesson and facilitate your student's reflection by asking him/her to answer the **Focus Question** and share his/her thinking.
- Extend the discussion by posing the following question.
  - **How is adding two 3-digit numbers with renaming in tens and ones different from that of two 3-digit numbers with renaming in ones?** *In the addition of two 3-digit numbers with renaming in tens and ones, the ones place and the tens place add up to 10 or more. But in the addition of two 3-digit numbers with renaming in ones, only the ones place adds up to 10 or more.*

Reflect and Connect

- Allow time for your student to reflect on what he/she has learned and ask questions about what he/she may be unsure of.
- Encourage him/her to share anything that was confusing or difficult, and how thinking about it differently and perseverance helped the process of learning.
- Ask your student to answer a reflection question or draw a picture to show his/her reflection. You may offer these prompts:
  - **How did you rename numbers today? How did renaming help you add? What strategies did you use to add?**

What to look for:

- an understanding of renaming in multiple places
- a strategy for adding numbers (vertical algorithm, base-ten set, making a ten, counting on)

Add With Renaming **109**

Practice On Your Own (Student Book, pages 29 and 30)

- **QUESTION 1** assesses your student's ability to compare 2- and 3-digit numbers using the comparison symbols.
- **QUESTION 2** assesses your student's ability to order three 3-digit numbers from greatest to least.
- **QUESTION 3** assesses your student's ability to make the least possible 3-digit number using the digits 5, 3, and 9 and explain his/her thinking.

Think!

- **QUESTION 4** assesses your student's ability to determine the greatest possible number and explain his/her thinking.
  - **What strategies should you use to have the greatest possible number?** *I can think about which digits need to go in the greatest place to give the greatest number.* **How can you check your work to make sure you have included all the required information?** *I can look at the final number and see if it follows all the listed requirements.*

More Resources

- Refer to **Do More at Home** below and **Reteach 2, Exercise 1C** if your student needs additional support.
- When your student is ready, have him/her work on **Additional Practice 2A, Exercise 1C**.
- To provide your student with a challenge, have him/her work on **Extension 2, Exercise 1C**.
- You may also assign **Mastery and Beyond 2A, Chapter 1, Practice 4** to provide further support and development to sustain learning.

Do More at Home

Invite your student to consider comparing numbers in everyday life. Look for opportunities to find 3-digit numbers throughout the day. Then ask your student to compare the numbers. Some possible examples include:

- *Comparing the digits on the television channels*
- *Comparing the pages of books*

Practice On Your Own Answers

(Student Book, pages 29 and 30)

1. **(a)** > **(b)** >
   (c) < **(d)** <
   (e) = **(f)** <
2. 821; 819; 812
3. 359
   Explanations vary. Example:
   The least number should have the least digit in the hundreds place.
   The digit 3 should be in the hundreds place.
   The digit in the tens place should be less than the digit in the ones place.
   The digit 5 should be in the tens place and the digit 9 should be in the ones place.

Think! Answer

4. 632;
   The number should be less than 633.
   1 less than 633 gives the greatest possible number.
   The answer is 632.

30 **Chapter 1** Numbers to 1,000

CHAPTER WRAP UP provides ideas to encourage reflection, consolidation of learning, and reviewing of key ideas.

PERFORMANCE TASK outlines the objectives of each question and provides prompts to facilitate students' self-awareness, monitoring, and learning.

Day 9 of 17

Chapter Wrap Up

Before your student works on **Performance Task**, help him/her recap the key learning objectives and develop a concept map to reflect the concepts and skills of the chapter. Use the following key terms to start constructing the concept map.

- Sum and difference
- Part-whole model
- Comparison model
- Word problems

Encourage your student to complete the **Chapter Self-Reflection** on page 229 as a form of self-reflection.

Teaching Tip

You may wish to note that at Grade 2, your student should have a firm understanding of the meaning of parts and whole to depict it in a part-whole model.

Performance Task (Student Book, pages 201 to 204)

Refer your student to the **Performance Task** to consolidate and deepen his/her understanding of the chapter through tasks that require him/her to show, explain, and/or apply thinking. You may use the rubric on page 225 to encourage your student to set his/her own goals.

QUESTION (a) requires your student to draw a comparison model to solve a two-step word problem.

What do you know about the problem? What do you need to find? What bar model could you draw? Why? What methods would you use to check your answers?

QUESTION (b) requires your student to solve a one-step word problem by drawing a part-whole model to support his/her reasoning.

What method did you use to find your answer? Explain your answer. What strategies did you use to help you? How do you know that your answer is correct?

QUESTION (c) requires your student to make a list of items that can be bought with the correct amount of change.

How would you carry out the task? What strategy could you use to help you find your answer? What do you need to find first? How do you know if your answer makes sense? Are there other possible answers?

Performance Task Answers

(Student Book, pages 201 to 204)

(a)

59 + 20 = 79
The tennis racket costs $79.
59 + 79 = 138
The two items cost $138 in all.

(b)

200 − 138 = 62
No, Coach Lee should receive $62 change.

(c) Answers vary. Example:

Item	Price	Yes (✔)	No (✘)
basketball	$9	✔	
soccer gloves	$21	✔	
running shoes	$35		✘
swimming goggles	$13	✔	
golf balls	$12	✔	

RUBRIC provides the scoring guide for each question in the Performance Task and relates the points scored to the criteria given.

Rubric (Student Book, page 204)

Use the scoring guide to help you give feedback on your student's work. Use the comments section to provide information about what was done well and what could be improved. Write words of encouragement to let your student know what he/she has done well.

Scoring Rubric

	Description	Point(s)
(a)	Your student: • is able to draw the comparison model correctly. • adds to find the cost of the tennis racket correctly. ($79) • adds to find the cost of the two items correctly. ($138)	1 1 1
(b)	Your student: • is able to draw the part-whole model correctly. • is able to identify that the amount of change is incorrect. • subtracts to find the correct amount of change. ($62)	1 1 1
(c)	Your student: • is able to identify items with a total cost of less than $62.	2
	Total	**8**

Use this table as a guide to help you relate your student's scores to his/her performance levels.

Level	Score
◡̈ ◡̈ ◡̈	7-8
◡̈ ◡̈	3-6
◡̈	0-2

STEAM PROJECT WORK provides a reminder of the ongoing project and the stage students should be at.

CHAPTER PRACTICE links the learning objective(s) of each lesson to a question to help home instructors identify gaps in students' learning. It also indicates the difficulty level of the questions based on Depth of Knowledge.

CHAPTER TEST is a summative assessment to assess students' understanding of the chapter.

CHAPTER SELF-REFLECTION provides students the opportunity to reflect on their learning.

I CAN STATEMENTS identify the learning goals for each lessons. These statements are used at Chapter Self-Reflection for students to reflect on their learning.

Day 19 of 24

Project Work (Student Book, Chapter 2, page 108)

- Your student is given an opportunity to make connections between engineering and mathematics in this project work.
- At the end of **Chapter 3**, your student should be able to complete **Part 3**.
- **Part 3** requires your student to design and set up a game for a games day. Your student is to apply his/her knowledge about addition and subtraction to decide how to play his/her game. He/she will also need to determine the cost of each game play.

Days 20–21 of 24

Chapter Practice (Student Book, pages 161 to 164)

- Have your student work on **Chapter Practice** in the Student Book independently to help him/her consolidate and extend understanding of the chapter.
- You may find a summary of the chapter learning objectives and the difficulty level of the questions below.
- Teaching prompts are provided for Levels 2 and 3 questions.
- When your student is ready, have him/her work on **Additional Practice 2A, Chapter Practice**.

Question	Level	Chapter 3 Learning Objective(s)	Section(s)	Day(s)
1	1	Subtract a 3-digit number from another 3-digit number with renaming in hundreds and tens.	3D	15
2	1	Mentally subtract tens from a given number between 100 and 900.	3B	6
3	1	Fluently subtract within 20 by taking away. Fluently subtract from a ten within 20. Fluently subtract within 20 by counting back. Fluently subtract within 20 by counting on.	3A	2–5
4	1	Fluently subtract within 100 without renaming, using strategies based on place value. Fluently subtract within 100 with renaming, using strategies based on place value. Subtract a 3-digit number from another 3-digit number without renaming. Subtract a 2-digit number from a 3-digit number with renaming in hundreds and tens. Subtract a 3-digit number from another 3-digit number with renaming in hundreds, tens, and ones.	3C, 3D	8–16
5	2	Fluently subtract from a ten within 20.	3A	3
6	1	Add or subtract within 1,000 using the relation between addition and subtraction.	3E	17
7	2	Fluently subtract within 100 without renaming, using strategies based on place value.	3C	8
8	3	Subtract a 2-digit number from a 3-digit number with renaming in hundreds and tens. Subtract a 3-digit number from another 3-digit number with renaming in hundreds, tens, and ones.	3D	14, 16

Days 16–17 of 17

Chapter Test

- Assign **Chapter Test 1** in **Assessment Guide Teacher Edition** to assess your student's understanding of the chapter.

10. 214;

11. **(a)**

Hundreds	Tens	Ones
3	8	0
3	5	9

The hundreds are equal.
8 tens > 5 tens
$380 > $359
Ms. Garcia saves more.

(b) Answers vary. Example:
4 [$100] 6 [$10]
Ms. Diaz saves $460.

12.

Explanations vary. Example:
The pattern rule is − 10.
10 less than 303 is 293, not 283.

13. $10 more than $435 is not $425.
It should be $10 more than $415.
four hundred fifteen

14. Methods vary. Example:
The value of the digit in the ones place is less than 10.
The value of the digit in the tens place can only be 0, 10, 20, 30, 40, 50, 60, 70, 80, or 90.
? ones + 31 = ? tens
Only 9 ones and 4 tens fit the equation.
4 is in the tens place and 9 is in the ones place.
The digit in the hundreds place is 4 + 1 = 5.
or

Hundreds	Tens	Ones
5	4	9

40 − 9 = 31

The 3-digit number is 549.

Chapter Self-Reflection

Check (✓) to show what I can do.

I Can	Yes	Not Sure	No
find the sum of two numbers by adding parts to make a whole.			
find the difference between two numbers by comparing or subtracting two numbers.			
solve one-step word problems involving addition by drawing part-whole models.			
solve one-step word problems involving subtraction by drawing part-whole models.			
solve one-step word problems involving situations of putting together or taking apart by drawing part-whole bar models.			
solve one-step word problems involving comparison by drawing comparison bar models.			
solve two-part word problems involving addition and subtraction by drawing bar models.			
use the three-step problem-solving model to solve two-part word problems involving addition and subtraction.			
solve two-step word problems involving addition and subtraction by drawing bar models.			
use the three-step problem-solving model to solve two-step word problems involving addition and subtraction.			

MY JOURNAL

I can show...	I still wonder...

Developed by an expert panel

Bring the best practices of seasoned educators, developers of home instructors, and champions of **Singapore Math®** into your classroom!

Consultants

Dr. Kho Tek Hong, Ph.D.

played a key role in putting Singapore Mathematics on the world map and is responsible for shaping Singapore's mathematics curriculum development. As a Project Director for the Primary Mathematics Project at Ministry of Education (MOE), Singapore, Dr. Kho led a team of curriculum specialists to create high-quality teaching and learning materials, and to develop the Model Method in the 1980s. This method is a pictorial way to represent mathematical quantities, and has proven to be a very successful problem solving tool over the decades.

Dr. Kho was a Mathematics teacher before becoming a lead curriculum designer, and then a principal curriculum specialist in MOE until his retirement. He was also a consultant to the MOE Mathematics Unit, Curriculum Planning and Development Division, and oversaw the school mathematics syllabus formulations since the late 1970s and remained involved in an advisory role in recent syllabus revisions.

Dr. Lee Ngan Hoe, Ph.D.

is an Associate Professor in the Mathematics & Mathematics Education Academic Group at the National Institute of Education, Nanyang Technological University, Singapore. He taught Mathematics and Physics in a secondary school before becoming a Gifted Education Specialist at the Ministry of Education, Singapore.

Dr. Lee is an active researcher and speaker at conference presentations. His key areas of focus are mathematics curriculum development, metacognition, and mathematical problem solving/modeling. His research includes international comparative studies, such as the Teacher Education Study in Mathematics (TEDS-M) and the International Comparative Research to Identify Unique and Promising Practices in Mathematics and Science Teacher Preparation for APEC Economies. He has also co-authored two primary mathematics packages, Shaping Maths and Maths Works, used in Singapore schools.

U.S. Consultant

Susan F. Resnick, MA

began her career as an educator in 1988. Since then, she has gathered more than 30 years of experience as a K-12 Special Education teacher, licensed math interventionist, public and private school teacher, principal, and District Math Coordinator. Susan also served as a curriculum consultant to Turnaround districts and is an Affiliate Professor of Special Education, Principal Licensure, and Teacher Leadership at a local university.

A seasoned champion of Singapore Math®, Susan is working with students, teachers, coaches, and administrators to implement Singapore Math® strategies in the United States and other countries.

Student Book Author

Dr. Koay Phong Lee, Ph.D.

was an Associate Professor of Mathematics Education at the National Institute of Education, Nanyang Technological University, Singapore, until her retirement. She was involved in training mathematics teachers in Malaysia, Brunei Darussalam, and Singapore. Her key areas of focus include learning difficulties in mathematics, mathematical investigations and problem-solving as well as the use of technology in teaching elementary and middle school mathematics.

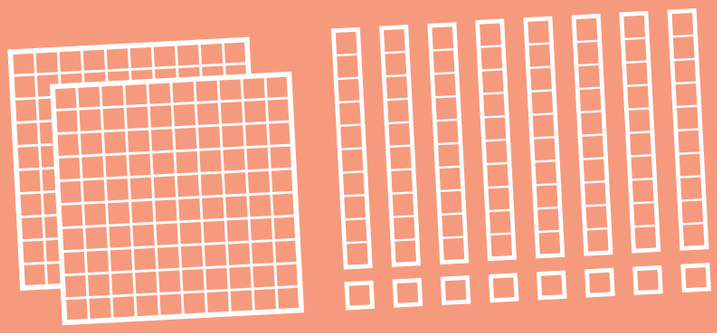
Dr. Koay has co-authored journal articles and publications, with a focus on an exploratory study on Low Attainers in Primary Mathematics (LAPM). She also co-authored Shaping Maths, a primary school mathematics package which is widely used in Singapore schools.

Home Instructor's Guide Author

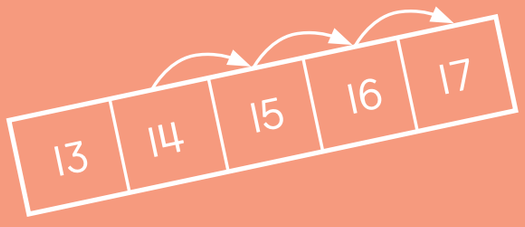
Jessica Kaminski, M.Ed.

was a teacher, academic coach, and consultant for over 15 years. She successfully put Singapore Math® to work in her classrooms. Convinced about its effectiveness, she went on to train teachers in over 55 districts across the United States, helping them to implement Singapore Math® strategies effectively in their classrooms.

Jessica now works as a consultant providing coaching, support and online courses for educators and Home instructors. Her passion is to provide customized professional development with a focus on differentiated instruction. Jessica has a Bachelor of Science in Elementary Education and a Master of Science in Special Education with an emphasis on Gifted Education.



Hundreds	Tens	Ones
1	9	7



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